

## Appendix

### 1. Self-perceived accessibility to vaccination

Regression analysis stratified by study site for factors associated with self-perceived accessibility to COVID-19 immunization programs. The univariate and multivariate analysis were repeated by applying a procedure of multiple imputation for missing values (100 imputations).

#### Geneva (N=441)

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 1.36 (0.78-2.35)    | 0.278   | 1.20 (0.64-2.27)      | 0.571   |
| Age (increase by 1 year)                               | 1.01 (0.99-1.04)    | 0.286   | 1.01 (0.99-1.04)      | 0.413   |
| ≥1 co-morbidity  | 1.34 (0.67-2.68)    | 0.413   | 1.07 (0.49-2.34)      | 0.862   |
| High self-perceived risk of COVID-19                   | 0.78 (0.39-1.56)    | 0.479   | 1.00 (0.47-2.12)      | 0.993   |
| COVID-19 infection (self)                              | 1.41 (0.69-2.89)    | 0.345   | 0.58 (0.25-1.33)      | 0.198   |
| COVID-19 infection (household)                         | 1.12 (0.53-2.36)    | 0.769   | 1.09 (0.45-2.63)      | 0.849   |
| Positive views on Immunization (general)               | 1.66 (0.94-2.94)    | 0.081   | 1.68 (0.75-3.78)      | 0.209   |
| Positive views on Immunization (COVID-19)              | 1.16 (0.67-2.00)    | 0.601   | 0.86 (0.41-1.82)      | 0.693   |
| Information through traditional media (TV, radio, web) | 1.58 (0.86-2.90)    | 0.137   | 1.94 (0.95-3.95)      | 0.069   |
| Information through social media                       | 1.13 (0.65-1.99)    | 0.664   | 1.35 (0.70-2.61)      | 0.377   |
| Information through community network                  | 0.93 (0.49-1.78)    | 0.837   | 0.87 (0.43-1.74)      | 0.689   |
| Information through other source                       | 3.53 (0.47-26.73)   | 0.222   | 5.04 (0.62-41.27)     | 0.132   |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   | Ref.                |         | Ref.                  |         |
| Africa   | 1.84 (0.67-5.00)    | 0.235   | 1.86 (0.65-5.36)      | 0.249   |
| Americas   | 3.17 (1.41-7.15)    | 0.005   | 2.68 (1.13-6.35)      | 0.025   |
| Eastern Mediterranean                                  | 3.27 (0.82-13.09)   | 0.093   | 2.78 (0.67-11.65)     | 0.161   |
| Asia   | 2.09 (0.22-19.86)   | 0.523   | 2.61 (0.25-26.82)     | 0.420   |
| Western Pacific  | 2.46 (0.97-6.20)    | 0.057   | 1.78 (0.65-4.87)      | 0.260   |

**Baltimore (N=142)**

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | P-value | aOR (CI 95%)          | P-value |
| Gender: female   | 2.29 (0.93-5.66)    | 0.072   | 1.70 (0.60-4.80)      | 0.317   |
| Age (increase by 1 year)                               | 0.97 (0.93-1.02)    | 0.239   | 0.96 (0.91-1.01)      | 0.105   |
| ≥1 co-morbidity  | 1.37 (0.54-3.43)    | 0.507   | 1.96 (0.65-5.84)      | 0.230   |
| High self-perceived risk of COVID-19                   | 0.70 (0.24-2.03)    | 0.513   | 2.69 (0.67-10.75)     | 0.161   |
| COVID-19 infection (self)                              | 0.63 (0.20-2.00)    | 0.434   | 3.31 (0.59-18.61)     | 0.174   |
| COVID-19 infection (household)                         | 0.87 (0.33-2.32)    | 0.786   | 0.72 (0.17-2.96)      | 0.648   |
| Positive views on Immunization (general)               | 1.50 (0.28-7.90)    | 0.635   | 1.28 (0.20-8.11)      | 0.794   |
| Positive views on Immunization (COVID-19)              | 1.46 (0.54-3.90)    | 0.452   | 2.12 (0.67-6.65)      | 0.199   |
| Information through traditional media (TV, radio, web) | 0.56 (0.15-2.05)    | 0.380   | 0.62 (0.09-4.45)      | 0.638   |
| Information through social media                       | 2.18 (0.69-6.87)    | 0.182   | 2.42 (0.49-11.99)     | 0.278   |
| Information through community network                  | 0.20 (0.04-1.04)    | 0.056   | 0.09 (0.01-0.76)      | 0.027   |
| Information through other source                       | NE                  |         | NE                    |         |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   |                     |         |                       |         |
| Africa   |                     |         |                       |         |
| Americas   | NE                  |         | NE                    |         |
| Eastern Mediterranean                                  |                     |         |                       |         |
| Asia   |                     |         |                       |         |
| Western Pacific  |                     |         |                       |         |

NE: Odds ratio not estimable due to empty cells or cells with low frequency

**Milano (N=126)**

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 3.65 (1.20 - 11.08) | 0.023   | 2.30 (0.38-13.89)     | 0.317   |
| Age (increase by 1 year)                               | 1.03 (0.99-1.07)    | 0.191   | 0.99 (0.94-1.05)      | 0.759   |
| ≥1 co-morbidity  | 0.93 (0.31-2.74)    | 0.893   | 1.34 (0.25-7.27)      | 0.734   |
| High self-perceived risk of COVID-19                   | 1.86 (0.62-5.55)    | 0.266   | 0.41 (0.09-1.86)      | 0.247   |
| COVID-19 infection (self)                              | 0.72 (0.09-6.04)    | 0.761   | 1.06 (0.06-18.00)     | 0.965   |
| COVID-19 infection (household)                         | 0.58 (0.15-2.32)    | 0.441   | 0.40 (0.05-3.08)      | 0.376   |
| Positive views on Immunization (general)               | 0.53 (0.11-2.50)    | 0.421   | 1.42 (0.13-15.93)     | 0.774   |
| Positive views on Immunization (COVID-19)              | 1.24 (0.40-3.67)    | 0.730   | 2.14 (0.37-12.58)     | 0.398   |
| Information through traditional media (TV, radio, web) | 1.28 (0.33-5.00)    | 0.722   | NE                    | -       |
| Information through social media                       | 0.67 (0.23-1.98)    | 0.468   | 0.38 (0.08-1.94)      | 0.246   |
| Information through community network                  | 1.03 (0.30-3.47)    | 0.967   | 2.43 (0.36-16.58)     | 0.365   |
| Information through other source                       | 0.80 (0.09-7.18)    | 0.845   | 0.10 (0.00-2.12)      | 0.138   |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   | Ref.                |         | Ref.                  |         |
| Africa   | NE                  | -       | NE                    | -       |
| Americas   | 0.46 (0.38-0.58)    | <0.001  | 0.53 (0.05-5.92)      | 0.603   |
| Eastern Mediterranean                                  | 0.30 (0.22-0.40)    | <0.001  | 1.27 (0.03-50.44)     | 0.897   |
| Asia   | 0.01 (0.01-0.01)    | <0.001  | NE                    | -       |
| Western Pacific  | NE                  | -       |                       | -       |

NE: Odds ratio not estimable due to empty cells or cells with low frequency

**Paris (N=103)**

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 1.56 (0.31 -7.98)   | 0.592   | 2.93 (0.18-47.09)     | 0.449   |
| Age (increase by 1 year)                               | 1.03 (0.96-1.11)    | 0.375   | 1.09 (0.97-1.24)      | 0.156   |
| ≥1 co-morbidity  | 1.41 (0.28-7.22)    | 0.680   | 0.40 (0.03-6.26)      | 0.517   |
| High self-perceived risk of COVID-19                   | 0.92 (0.22-3.94)    | 0.915   | 0.31 (0.03-3.24)      | 0.329   |
| COVID-19 infection (self)                              | NE                  | -       | NE                    | -       |
| COVID-19 infection (household)                         | NE                  | -       | NE                    | -       |
| Positive views on Immunization (general)               | 2.40 (0.54-10.62)   | 0.248   | 15.52 (0.76-316.86)   | 0.075   |
| Positive views on Immunization (COVID-19)              | 1.55 (0.37-6.56)    | 0.554   | 1.41 (0.11-17.50)     | 0.788   |
| Information through traditional media (TV, radio, web) | 0.53 (0.06-4.49)    | 0.559   | 0.15 (0.00-5.14)      | 0.293   |
| Information through social media                       | 0.99 (0.19-5.14)    | 0.994   | 51.34 (1.02-2576.27)  | 0.049   |
| Information through community network                  | 3.86 (0.96-15.59)   | 0.058   | 10.37 (1.25-86.27)    | 0.030   |
| Information through other source                       | NE                  | -       | NE                    | -       |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   | Ref.                |         | Ref.                  |         |
| Africa   | NE                  | -       | 4.06 (0.06-11.31)     | 0.513   |
| Americas   | 1.00 (0.02-50.40)   | 1.000   | 0.03 (0.00-11.31)     | 0.251   |
| Eastern Mediterranean                                  | 13.5 (0.60-305.29)  | 0.102   | 15.73 (0.26-936.44)   | 0.186   |
| Asia   | 24 (0.79-732.38)    | 0.068   | 94.05 (0.54-16348.27) | 0.084   |
| Western Pacific  | NE                  | -       | NE                    | -       |

NE: Odds ratio not estimable due to empty cells or cells with low frequency

## 2. Demand for COVID-19 vaccination

Regression analysis stratified by study site for factors associated with demand for COVID-19 immunization programs. The univariate and multivariate analysis were repeated by applying a procedure of multiple imputation for missing values (100 imputations).

### Geneva (N=441)

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 1.08 (0.72-1.62)    | 0.709   | 1.23 (0.69-2.18)      | 0.484   |
| Age (increase by 1 year)                               | 1.03 (1.01-1.05)    | 0.001   | 1.02 (1.00-1.05)      | 0.068   |
| ≥1 co-morbidity  | 1.56 (0.98-2.49)    | 0.060   | 1.69 (0.84-3.37)      | 0.138   |
| High self-perceived risk of COVID-19                   | 1.41 (0.89-2.25)    | 0.143   | 1.22 (0.66-2.25)      | 0.516   |
| COVID-19 infection (self)                              | 1.06 (0.61-1.84)    | 0.826   | 0.81 (0.37-1.79)      | 0.610   |
| COVID-19 infection (household)                         | 1.12 (0.67-1.86)    | 0.673   | 1.13 (0.55-2.35)      | 0.736   |
| Positive views on Immunization (general)               | 29.26 (11.63-73.60) | <0.001  | 10.82 (3.81-30.72)    | <0.001  |
| Positive views on Immunization (COVID-19)              | 16.11 (9.60-27.02)  | <0.001  | 8.64 (4.69-15.90)     | <0.001  |
| Information through traditional media (TV, radio, web) | 1.49 (0.92-2.39)    | 0.103   | 0.91 (0.46-1.79)      | 0.786   |
| Information through social media                       | 0.66 (0.45-0.98)    | 0.041   | 0.84 (0.48-1.48)      | 0.553   |
| Information through community network                  | 0.96 (0.60-1.52)    | 0.857   | 0.92 (0.50-1.69)      | 0.783   |
| Information through other source                       | 0.37 (0.14-1.01)    | 0.052   | 0.56 (0.15-2.09)      | 0.388   |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   | Ref.                |         | Ref.                  |         |
| Africa   | 0.98 (0.41-2.35)    | 0.964   | 2.16 (0.61-7.71)      | 0.235   |
| Americas   | 1.22 (0.60-2.47)    | 0.586   | 0.79 (0.29-2.14)      | 0.641   |
| Eastern Mediterranean                                  | 1.74 (0.64-4.69)    | 0.278   | 2.09 (0.53-8.33)      | 0.294   |
| Asia   | NE                  | -       | 0.59 (0.09-3.78)      | 0.580   |
| Western Pacific  | 1.01 (0.46-2.22)    | 0.987   | 0.61 (0.20-1.86)      | 0.385   |
| Self-perceived accessibility to COVID-19 Immunization  | 1.29 (0.72-2.30)    | 0.392   | 1.20 (0.55-2.65)      | 0.647   |

NE: Odds ratio not estimable due to empty cells or cells with low frequency

**Baltimore (N=142)**

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 1.23 (0.59-2.60)    | 0.582   | 1.75 (0.59-5.20)      | 0.311   |
| Age (increase by 1 year)                               | 1.07 (1.02-1.11)    | 0.002   | 1.03 (0.97-1.09)      | 0.282   |
| ≥1 co-morbidity  | 2.56 (1.24-5.67)    | 0.012   | 2.10 (0.73-6.08)      | 0.169   |
| High self-perceived risk of COVID-19                   | 0.65 (0.28-1.49)    | 0.308   | 1.30 (0.38-4.50)      | 0.676   |
| COVID-19 infection (self)                              | 0.67 (0.28-1.58)    | 0.360   | 2.57 (0.53-12.57)     | 0.244   |
| COVID-19 infection (household)                         | 0.70 (0.32-1.51)    | 0.364   | 0.37 (0.09-1.50)      | 0.163   |
| Positive views on Immunization (general)               | NE                  | -       | NE                    | -       |
| Positive views on Immunization (COVID-19)              | 15.63 (5.02-48.63)  | <0.001  | 17.17 (4.74-62.16)    | <0.001  |
| Information through traditional media (TV, radio, web) | 4.82 (1.82-12.75)   | 0.002   | 7.12 (0.83-61.16)     | 0.074   |
| Information through social media                       | 0.49 (0.22-1.06)    | 0.069   | 2.40 (0.34-16.98)     | 0.381   |
| Information through community network                  | 0.13 (0.01-1.13)    | 0.064   | 0.09 (0.00-1.71)      | 0.108   |
| Information through other source                       | NE                  |         | NE                    | -       |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   |                     |         |                       |         |
| Africa   |                     |         |                       |         |
| Americas   | NE                  | -       | NE                    | -       |
| Eastern Mediterranean                                  |                     |         |                       |         |
| Asia   |                     |         |                       |         |
| Western Pacific  |                     |         |                       |         |
| Self-perceived accessibility to COVID-19 Immunization  | 1.43 (0.60-3.43)    | 0.419   | 1.20 (0.55-2.65)      | 0.647   |

NE: Odds ratio not estimable due to empty cells or cells with low frequency

**Milano (N=126)**

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 0.93 (0.44-1.96)    | 0.842   | 1.03 (0.17-6.35)      | 0.978   |
| Age (increase by 1 year)                               | 1.02 (1.00-1.05)    | 0.100   | 1.02 (0.97-1.07)      | 0.509   |
| ≥1 co-morbidity  | 1.30 (0.64-2.63)    | 0.469   | 1.51 (0.36-6.39)      | 0.574   |
| High self-perceived risk of COVID-19                   | 0.73 (0.34-1.55)    | 0.410   | 3.09 (0.68-14.01)     | 0.144   |
| COVID-19 infection (self)                              | 0.38 (0.10-1.50)    | 0.167   | 1.44 (0.11-19.19)     | 0.782   |
| COVID-19 infection (household)                         | 1.36 (0.48-3.84)    | 0.559   | 1.37 (0.17-10.75)     | 0.764   |
| Positive views on Immunization (general)               | NE                  | -       | NE                    | -       |
| Positive views on Immunization (COVID-19)              | 48.21 (13.36-174.0) | <0.001  | NE                    | -       |
| Information through traditional media (TV, radio, web) | 4.42 (1.51-12.97)   | 0.007   | 0.08 (0.00-2.22)      | 0.136   |
| Information through social media                       | 0.44 (0.22-0.91)    | 0.027   | 0.11 (0.02-0.48)      | 0.004   |
| Information through community network                  | 0.76 (0.34-1.66)    | 0.487   | 1.83 (0.37-9.12)      | 0.463   |
| Information through other source                       | 0.14 (0.02-1.19)    | 0.072   | 0.35 (0.01-14.84)     | 0.583   |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   | Ref.                |         | Ref.                  |         |
| Africa   | 4.00 (3.34-4.80)    | <0.001  | NE 0.57 (0.08-4.27)   | -       |
| Americas   | 1.64 (1.49-1.81)    | <0.001  | 3.02 (0.12-76.35)     | 0.584   |
| Eastern Mediterranean                                  | 1.78 (1.50-2.11)    | <0.001  | 0.02 (0.00-4.19)      | 0.503   |
| Asia   | 0.27 (0.21-0.34)    | <0.001  | NE                    | 0.148   |
| Western Pacific  | NE                  | -       | NE                    | -       |
| Self-perceived accessibility to COVID-19 Immunization  | 1.29 (0.72-2.30)    | 0.392   | 1.02 (0.97-1.07)      | 0.509   |

NE: Odds ratio not estimable due to empty cells or cells with low frequency

**Paris (N=103)**

|  | Univariate analysis |         | Multivariate analysis |         |
|--|---------------------|---------|-----------------------|---------|
|  | OR (CI 95%)         | p-value | aOR (CI 95%)          | p-value |
| Gender: female   | 2.33 (2.09-2.61)    | <0.001  | 2.43 (0.31-19.09)     | 0.397   |
| Age (increase by 1 year)                               | 1.06 (1.05-1.06)    | <0.001  | 1.08 (0.99-1.18)      | 0.095   |
| ≥1 co-morbidity  | 3.65 (3.26-4.08)    | <0.001  | 1.63 (0.12-21.77)     | 0.712   |
| High self-perceived risk of COVID-19                   | 0.30 (0.26-0.33)    | <0.001  | 3.21 (0.36-28.34)     | 0.294   |
| COVID-19 infection (self)                              | 1.40 (1.13-1.74)    | 0.002   | 9.40 (0.36-245.25)    | 0.178   |
| COVID-19 infection (household)                         | NE                  | -       | NE                    | -       |
| Positive views on Immunization (general)               | 3.65 (0.45-29.65)   | 0.225   | 1.33 (0.04-47.30)     | 0.876   |
| Positive views on Immunization (COVID-19)              | 3.18 (2.83-3.57)    | <0.001  | 2.70 (0.34-21.30)     | 0.346   |
| Information through traditional media (TV, radio, web) | NE                  | -       | NE                    | -       |
| Information through social media                       | 0.51 (0.46-0.58)    | <0.001  | 1.91 (0.20-18.04)     | 0.574   |
| Information through community network                  | 0.18 (0.16-0.21)    | <0.001  | 0.09 (0.01-0.61)      | 0.014   |
| Information through other source                       | NE                  | -       | NE                    | -       |
| Region of origin (WHO)                                 |                     |         |                       |         |
| Europe   |                     |         |                       |         |
| Africa   |                     |         |                       |         |
| Americas   |                     |         |                       |         |
| Eastern Mediterranean                                  | NE                  | -       | NE                    | -       |
| Asia   |                     |         |                       |         |
| Western Pacific  |                     |         |                       |         |
| Self-perceived accessibility to COVID-19 Immunization  | 0.16 (0.14-0.19)    | < 0.001 | 0.05 (0.00-0.58)      | 0.017   |

NE: Odds ratio not estimable due to empty cells or cells with low frequency